THE PALESTINE EXPLORATION FUND

NOTES AND NEWS.

The Geological Expedition has been, with the exception of one detail, the section across North Palestine, successfully accomplished. Professor Hull returned to London on February 12th, bringing with him the materials for constructing a geological map of the Holy Land very much in advance of anything which could hitherto be attempted. He is now engaged in drawing up a detailed report, which will not, however, be ready for some time yet. Meanwhile, however, we shall be able to publish a popular account of his journey, the first instalment of which appears in this number of the *Quarterly Statement*.

The leading features of his report may be briefly stated as follows:—Professor Hull has traced the ancient margin of the Gulfs of Suez and Akabah to the height of 200 feet above their present level, so that the whole country has been submerged to that extent, and has been gradually rising. As one most interesting result of this rise, the Professor is of opinion that at the time of the Exodus there may have been a continuous connection of the Mediterranean and the Red Sea. If his fact is established, it will place all the questions connected with the narrative on an entirely new footing. As regards the Dead Sea, he has discovered that it formerly stood at an elevation of 1,400 feet above its present level; that is to say, 150 feet above the level of the Mediterranean. The history of this gradually lowering of the waters will form a special feature in Professor Hull's forthcoming report. He has also found evidences of a chain of ancient lakes in the Sinaitic district, and of another chain in the centre of the Wâdy Arabah, not far from the watershed. The great line of feature of the Wâdy Arabah and the Jordan Valley has been traced to a distance of more than a hundred miles. The materials for working out a complete theory of the origin of this remarkable depression are now available. They are found to differ in many details from the one furnished by Lartet. The terraces of the Jordan have been examined, the most important one being 600 feet above the present surface of the Dead Sea. The relation of the terraces to the surrounding hills and valleys shows that these features had already been formed before the waters had reached their former level. Sections have been carried east and west across the Arabah and the Jordan Valley. Two traverses of Palestine have also been made from the Mediterranean to the Jordan.

Meantime, Dr. Gordon Hull has taken more than a hundred photographs, chiefly of places never before figured. These are now being printed, and a list of them will be ready for the next *Quarterly Statement*. As regards Mr. Henry Hart and Mr. Reginald Lawrence, the two "volunteers," the former has made

valuable botanical and other collections, which, however, were not made for the Committee, who allowed these gentlemen to join Professor Hull on the condition of their paying their own expenses, and have therefore no claim upon them for their discoveries.

On the arrival of the party at Gaza, as will be seen by the letters of Professor Hull, Captain Kitchener left them and returned to Egypt alone, and by a new route. Mr. Armstrong went on with Professor Hull as far as Jerusalem, where he remained for some weeks working up the map from the observations, plans, and sketches taken by Captain Kitchener and himself in the Wâdy Arabah. This done, he proceeded to Cairo and received from Captain Kitchener his reports—(1) on the topographical work of the Expedition; (2) of his own ride across the Desert from Gaza to Ismailiyeh, and the map of the route. He arrived in England on Wednesday, March 12th.

It is too late to publish the maps and reports with this number of the *Quarterly Statement*. It will, however, be interesting to select one or two of the most striking points. Captain Kitchener received from an Arab a version of the story of Palmer's murder, which may or may not be true, but which differs materially from the accounts already published; he found the natives profoundly impressed by the vigour with which Sir Charles Warren hunted down the murderers, of whom the most guilty is still, however, at large; he visited the Temple at Sabul el Khadeim; he has advanced a new theory as to the origin and purposes of the *nawamis* concerning which Palmer's "Desert of the Exodus" gives a good account. On the way from Akabah to the Dead Sea he found traces of an old city, about a mile north-east of the Bay of Akabah; he made a triangulation of the whole valley, and in his report describes the conformation of the ground; he visited Petra with the rest of the party; he describes the distribution of the tribes over the ancient Edom, and he corrects and fixes the shape and positions of the southern shores of the Dead Sea.

One passage may be quoted at length:—

"Mr. Armstrong explored the country towards the east, and found, six miles north of Feidan, the ruins of a small town in a valley surrounded by bold and precipitous cliffs. The ruined walls are from a foot to 3 feet high; the stones are roughly squared, and of no great size; there are some black heaps which resemble clay heaps, and show that very probably ancient mines may be found in the neighbourhood." No name could be obtained from this ruin; indeed the difficulty of getting names at all in the Wâdy Arabah is very great, because there are no natives to ask them of. Other remains and indications of former buildings were observed on the eastern side; as in the Sinai peninsula, there were formerly terraces on the valley slopes irrigated by the streams which now run to waste. Also, Captain Kitchener heard many stories and reports concerning the ruins which lie east of the hills of which Petra is one. It must be remembered that Laborde is the only traveller who has yet been in this district. His ride through it was too hasty to allow of exploration, yet Captain Kitchener speaks highly of the accuracy of his plan of Petra.

Another interesting find was made by Mr. Hart, in his botanical rambles, at a place called Khurbet Lubrush. "These remains consist of a large number of *nawamis;* some of which are in a wonderfully perfect state of preservation. They are dotted about thickly over the site, without any plan, and the openings in them having no special direction. A few loose stone walls near some of them have the appearance of having been thrown up recently round tents. Enclosing the greater number of these *nawamis* is an ancient wall, following the contour of the hill for a quarter of a mile; only the foundations now remain, but they were of massive undressed masonry of apparently very remote antiquity. Inside the wall there are the ruins of an oblong building of similar masonry, very probably an ancient temple. Unfortunately, the remains are so ruined that it is impossible, without considerable labour, to thoroughly explore or measure the monument. Only one corner could be determined, the remainder being covered by heaps of massive stone blocks."

The cost of the Expedition has been about £2,000. The publication of the results must, however, be added. A large part of the bill remains to be paid. The subscribers of the Society will perhaps make a note of this fact.

The small piece of the Survey of Eastern Palestine, consisting of 550 square miles, has been reduced and engraved on the same scale as the modern Map of Western Palestine. Subscribers to the Society who wish to have it in order to add it to their map, can do so by application to the Secretary, post free, for eighteenpence.

The two volumes to complete the "Survey of Western Palestine" are very nearly ready. As soon as the work is completed, the Committee will take steps to have the few copies which remain subscribed. They would greatly prefer to see them in public libraries, where their contents would be generally accessible, and would therefore be much obliged if their friends would place them in correspondence with librarians in any part of the world.

The only authorised lecturers for the Society are—

(1) The Rev. Henry Geary, Vicar of St. Thomas's, Portman Square. His lectures are on the following subjects :—
The Survey of Western Palestine, as illustrating Bible History.
Palestine East of the Jordan.
The Jerusalem Excavations.
A Restoration of Ancient Jerusalem.

(2) The Rev. James King, Vicar of St. Mary's, Berwick. His subjects are as follows :—
The Survey of Western Palestine.
Jerusalem.
The Hittites.
The Moabite Stone and other monuments.

BALANCE SHEET.

1883.		£	s.	d.
Jan. 1.	Balance	363	14	3
Dec. 31.	Subscriptions	2,014	1	1
„	Maps and Memoirs	881	7	0
„	Books	100	11	0
„	Photographs	22	3	7
		£3,381	16	11

1883.		£	s.	d.
Dec. 31.	Exploration	732	2	3
„	Maps and Memoirs	1,521	5	2
	Management :			
„	Salaries and wages	374	7	3
„	Rent	121	0	0
„	Stationery, Advertising, Lithography, Insurance, and Office	83	18	2
„	Printing	263	2	2
„	Postage	113	16	3
„	Balance	172	5	8
		£3,381	16	11

The liabilities of the Society on January 1st were as follows:—

	£	s.	d.
1. Office and Printing account	652	17	9
2. Memoirs .. .. about	500	0	0
3. Maps .. .. „	750	0	0
4. Exploration .. .. .. „	1,500	0	0

As regards the second account, it includes part, but not all, of the books, engravings, lithographs, &c., now being prepared. This amount is already reduced by £388. Up to the present moment the amount spent on "Maps and Memoirs" is more than equalled by the receipts, so that, although we do not expect the small maps to pay the expense of production, which was very heavy, the general fund will not bear any part of that expense. The third account has now been reduced by £300, and the fourth by £885.

The assets of the Society are—(1) a balance in hand on March 20th of £816; (2) the amount due for the "Survey of Western Palestine," about £1,000, which will be called in on the completion of the work in April; (3) the copies of the "Survey" still unsubscribed for, which will then be offered to libraries and the public; (4) copyrights of books, photographs, collections, &c. The subscribers will understand that the liabilities on the Maps and Memoirs have nothing to do with the general fund.

The printing account is large, but this will be greatly reduced during the present quarter.

Speaking roughly, without special effort the Committee can reckon on a body of subscribers whose guineas and half guineas amount to about £2,000 a year: their management expenses are very nearly a fixed quantity, viz., about £600 a year. The printing of the *Quarterly Statement*, given to subscribers, requires about £400, while the postage of the Journal comes to about £70 a year.

The following is the classified division of the year's expenditure:—

Exploration	22·78 per cent.
Maps and Memoirs ..	47·43 „
Management	18·04 „
Printing	8·19 „
Postage	3·56 „
	100·00

March 20th, 1884.

WALTER MORRISON,
Hon. Treasurer.

The income of the Society, from December 12th to March 21st inclusive, amounted in all, including subscriptions, lectures, and payment for maps, memoirs, and publications, to £2,612 8*s.* 10*d.* On March 21st the balance in the Banks was £816.

It is suggested to subscribers that the safest and most convenient manner of paying subscriptions is through a Bank. Many subscribers have adopted this method, which removes the danger of loss or miscarriage, and renders unnecessary the acknowledgment by official receipt and letter.

Subscribers who do not receive the *Quarterly Statement* regularly, are asked to send a note to the Secretary. Great care is taken to forward each number to all who are entitled to receive it, but changes of address and other causes give rise occasionally to omissions.

While desiring to give every publicity to proposed identifications and other theories advanced by officers of the Fund and contributors to the pages of the *Quarterly Statement*, the Committee wish it to be distinctly understood that by publishing them in the *Quarterly Statement* they neither sanction nor adopt them.

THE PALESTINE PILGRIMS' TEXT SOCIETY.

Enclosed with this number of the *Quarterly Statement* will be found a prospectus of the objects of the Palestine Pilgrims' Text Society, newly established under the Directorate of Sir Charles Wilson. The Society proposes to issue, as funds permit:—

(1) The whole series of early pilgrims' travels in the Holy Land, translated and annotated.

(2) The passages from the early Fathers which relate to the topography and geography of the Holy Land.

(3) Those passages from the Talmud which bear upon these questions.

(4) The early Arabic and Persian descriptions of the country in translation.

(5) Such portions of Procopius and the Byzantine historians which are concerned with Palestine.

As regards the first of these objects, the Council of the Society will be able to make use of the labours of the late Dr. Titus Tobler, in his collection of texts, published first in Germany, and next, with the collaboration of M. Aug. Molinier, in the Geographical series of the *Société de l'Orient Latin*, a society whose excellent work is too little known in this country. An account of its publications, by Miss L. Toulmin Smith, appeared in the *Academy* of February 16th, 1884. The texts published by Tobler, and by the French Society, are not translated, and it is felt that in order to make them generally useful in this country they must be published in English. Each pilgrim's narrative will be issued with separate introduction and notes, and a map showing his route in Syria. The early Fathers, the Byzantine historians, and the Persian and Arabic historians, have never been translated, or even consulted for their topography; while as for the Talmud, it would be difficult to find a dozen scholars in this country who have even read it. The Society is entirely separate from the Palestine Exploration Fund, but the Committee have granted the use of their Offices, and the Secretary of the Fund is the Honorary Secretary of the Society.

PROFESSOR HULL'S LETTERS.

I.

November 10*th*, 1883.

This will be my last letter to you for some time. We are just about to drop down the Gulf of Suez in a sail-boat, and then to land opposite "Moses' Wells," where we camp to-night and to-morrow (Sunday).

Our camels arrived here safely on Friday, and are by this time probably in camp at the Wells. We are now all here, some of our party having arrived yesterday, my son and I the day previous, so as to see to everything connected with our journey, and any objects of interest in the geology of the neighbourhood.

As the grand escarpment of Jebel Attâkah presented so fine an appearance from the roof of our hotel yesterday morning, we determined to visit it; so we dropped down the bay and crossed over to the pier constructed by M. de Lesseps for bringing stone over here for the piers and harbour of the Ship Canal.

The rock is limestone, exceedingly rich in fossils, of which we carried away some, and with part of our baggage are sending them on to Jerusalem to await our arrival there.

Our Arab boatmen proved right pleasant and hard-working fellows, and when the wind fell, took to their oars with a will, chanting a monotonous, but not disagreeable, refrain all the while.

The Duke of Connaught has just passed through and embarked on board the "Shannon," which has been lying in the harbour for some twenty-four hours awaiting his arrival. A salute of eighteen guns was fired from the fort in his honour this morning.

I think we are fortunate in our conductor, Barnard Heilpern. He is most obliging, and seems to manage affairs well. We have also secured the services of the celebrated cook, Ibn Miriam. We are all well, through God's goodness, and in good spirits, anticipating life in the desert; to-night will be our first under a tent.

Kindly address to the care of Consul Moore, at Jerusalem.

II.

December 2*nd*, 1883.

I think my last letter was dated from Suez, and I am now able to announce our safe arrival at Akabah on the 27th ult., after a very interesting but somewhat laborious journey across the Sinaitic peninsula. We had every

reason to be satisfied with the conduct of our Towârah Bedouins, who have accompanied us thus far and returned to their homes in Wâdy Feiran yesterday. We spent three days in the neighbourhood of Jebel Musa, and made the ascent of that mount, from the top of which Kitchener took angles to several prominent points, while on the same day Hart ascended Mount Catharina, a feat hitherto unperformed in one day, and was rewarded by finding several plants which are representative of colder climes. From Jebel Musa to this place we have taken the upper or northern route partially explored by the late Professor Palmer, and at an earlier period by Laborde, as recommended in the instructions of the Committee; this has enabled us to add considerably to the accuracy of the geology and topography of this district, while my son has had an opportunity of taking numerous photographs of districts which will be entirely new.

On Saturday week we traversed a magnificent gorge, cut through granite cliffs and extending for several miles, which we believe has not hitherto been described, though it may have been visited by Laborde and Palmer; it commences at the head of the Wâdy el Ain, and on Sunday, 25th, we encamped lower down the same valley. We found the escarpment of the Tîh in the district where we crossed much more broken and indeterminate than is generally represented on the maps, owing to the existence of several large faults or dislocations of the strata which traverse that district in a generally north and south direction; and we have finally determined the position of the leading line of fracture to which at least this portion of the Wâdy el Arabah primarily owes its existence. I regret to have to announce that our course towards the Salt Sea by this valley is barred, owing to a blood feud between the Alowyn and Teyahah tribes; this is a serious disappointment to us all, as it may render it impossible for us to visit the southern extremity of that sea. We have, however, entered into a contract with Sheikh Mohammed Ibn Jad (of the Alowyn tribe), by which he undertakes to escort us to the Wâdy Musa and Petra, and one day's march further up the Arabah, after which we shall have to strike off west into the Tîh plateau—somewhat in the line traversed by Palmer, Drake, and Robinson—to Gaza, whence we shall make our way by Jaffa to Jerusalem. This will enable us at any rate to explore about two-thirds of the Wâdy el Arabah, to determine the position of the principal elevations, to ascertain the height of the dividing ridge between the Gulf of Akabah and the Salt Sea, and to examine Mount Hor and Petra, from which we hope to be able to bring home for the first time some good photographs. It will also enable me to make a geological traverse of the district bordering the southern extremity of Western Palestine; so that there is some compensation for our disappointment. We are all in excellent health and good form, notwithstanding the heavy marches and considerable fatigue; and we have made excellent collections illustrating the botany, geology, and zoology of the district we have traversed.

III.

December 26th.

My last letter was written at Akabah: I hope it has been received. I expected that my next would be from Gaza or Jerusalem, but a series of unforeseen events has caused me to date from Es Safeh, in the Ghor.

Let me say in the first place that we are all safe and well, and that up to our entrance into the Ghor eleven days since, everything had gone as prosperously as could have been anticipated. In my former letter I stated that our way to Jerusalem was blocked, as Mohammed Jad refused to take us down into the Ghor, and we left Akabah with the full expectation of reaching Gaza, and so on to Jerusalem. Our party was placed under the immediate escort of Mohammed's brother Ali, and after some difficulties with the Arabs we ultimately got off on 3rd ultimo, and proceeded up the Wâdy el Arabah by easy stages, all our party being busily engaged in making observations in their several departments.

On reaching the watershed, on the 7th, Sheikh Ali made an unexpected proposal to the conductor, Bernhard Heilpern, to the effect that for a certain sum he would take us down into the Ghor, to the camp of the Ghawarnehs, to within two hours' march of the Salt Sea, and thus enable us to carry out our original intention of marching through the Arabah direct to Jerusalem. We gladly accepted the proposal, and the sum of 100 dollars (about £17) was agreed upon, while the Sheikh promised to remain with us in the Ghor till means of transport should arrive from Jerusalem. This change of route was most acceptable, as it enabled Kitchener and myself to carry out our respective surveys through the whole length of the Arabah, and saved a long and wearisome journey over the limestone tableland of the Tîh. With glad hearts we turned our steps up Wâdy Kusheibeh, and pitched our tents at the base of Mount Hor, which we determined, if possible, to climb, and also to visit Petra.

Mount Hor was an important trigonometrical station for Kitchener, and I was also anxious to examine the geology of this district. We were soon visited by a party of mounted Arabs from Petra and Wâdy Musa, who demanded most exorbitant terms for permission to visit these sacred spots, and it was only after long discussion, and striking tents with the determination to leave the spot unvisited, that anything like possible terms could be obtained. On the morning of the 10th, long before daybreak, our party set off, guided by a lantern, and made the ascent of the mountain, where Kitchener was able to make his observations. We then descended into Petra, made a hasty visit of the ruins, and, after passing through scenery of the grandest kind, reached our camp long after sunset. This expedition was attended with the most interesting geological and botanical results. On Saturday, 15th, we reached the edge of the Ghor, and descending next morning, pitched our camp in the valley, where we were visited by Sheikh Arari, and his party of mounted Bedouins, from Wâdy Musa. We consented to pay him 30 dollars for passing through a portion of his territory in the Wâdy el Arabah, but have sternly refused the

repeated demands of some of his followers for further backsheesh. Before arriving at the edge of the Ghor we had sent two Arab messengers to Jerusalem, with intelligence of our arrival, and a request that horses and mules should be immediately sent down by Mr. Cook's agent to the camp of the Ghawarnehs on which to proceed to Jerusalem. You may imagine our disappointment on receiving the intelligence, on the return of the messenger, that a rigid quarantine had been established for all parties coming from the south, and that the Turkish governor had ordered that we should proceed to Gaza, where we must pass fifteen days before being allowed to enter the city, and that the mule-drivers themselves would have to remain with us in quarantine for the same period. Unhappily for us the agent requested further instructions before sending the mules, and notwithstanding that we have sent two sets of messengers with information that we have no means of leaving this spot, we have been now ten days in the Ghor, practically prisoners. Sheikh Ali refuses to cross to the other side of the Dead Sea with us, and the Ghawarnehs have no means of carrying baggage. This delay, with the probable quarantine which may follow at Gaza, is most vexatious; but we have been endeavouring to turn our enforced delay to the best account, by making observations in the neighbourhood. Kitchener has completed his triangulation up to the south shore of the Salt Sea; Hart has added largely to the known flora and fauna of the district; Lawrence has taken a continuous series of meteorological observations; my son has taken about eighty large photos, and a good many small ones; and I have made a tolerably complete geological survey of the Wâdy el Arabah, on the enlarged map of Dr. Smith's atlas, kindly presented to me by Mr. John Murray. We are in hourly expectation of the arrival of the mules; and yesterday we endeavoured to keep up the traditions of old England by having for our Christmas dinner roast turkey and plum pudding, and we duly remembered our absent friends over our penultimate bottle of claret.

IV.

New Year's Day, 1884.

I left off my letter in the Ghor, and now conclude it from Gaza. Shortly after concluding, an Arab arrived with the happy tidings that he had seen a large party of mules and horses crossing the marsh, and that they would be with us before sunset. A loud hurrah greeted this news, and I *backsheeshed* the messenger on the spot. Towards sundown the tinkling of bells was heard, and soon after the whole *cortége* arrived at our camp. Preparations were immediately commenced for an early departure on the next day, and the amount of backsheesh to be presented to Sheikh Ali and the Ghawarneh Sheikh was arranged between ourselves and the conductor. We were astir early next morning, and soon after sunrise, mounted on our spirited little horses, we were wending our way through the groves bordering the Salt Sea. That day's march was a long one: we crossed the

marsh, examined Jebel Usdum, and then ascending by Wâdy Suweireh made our way towards our camping ground, in Wâdy el Abd, which we did not reach till three hours after sunset, making twelve hours in the saddle! The following day we camped at Tel-el-Mihl, and the day after at Bir-es-Seba, a spot of peculiar interest to us all, from its connection with the patriarch Abraham. The next day brought us to Tel Abu Harari, and yesterday (December 31st) we entered our quarantine ground in the suburbs of Gaza. We entertained hopes to the last that the Pasha of Jerusalem would have relented. But a kind letter from Mr. Moore, our Consul at Jerusalem, informed me that his efforts in this direction had been unavailing, and that our only prospect of getting out of quarantine before the lapse of the fifteen days would be by telegraphing to Lord Dufferin, with the request that he would use his influence with the authorities at Constantinople. This I have done, and we now await the result. This enforced imprisonment will cause a serious loss both of time and money, as we have to bear all our own expenses, and, in addition, those of the muleteers, and even of the soldiers who are keeping guard over us. One advantage, however, has resulted. We have been able to make a complete traverse across Southern Palestine, and in part by a road not hitherto explored by previous travellers. Our quarters here are comfortable and cheerful, and we are all in good health. Kitchener yesterday left us on his return to Cairo. I forgot to mention that on the 24th ultimo a party of four Arabs arrived from Cairo on camels, bringing a letter from the Consul-General, to the effect that he had received a telegram from the Foreign Office expressing anxiety on our behalf, on the part of the Committee, consequent on the defeat of General Hicks's army in the Soudan, the news of which it was supposed might stir up a hostile feeling among the Arabs towards Europeans. We had not before heard of this unhappy event; but it was speedily known among all the Arabs around. We took care to inform them that Hicks's army was composed of Egyptian and not of British troops. The Cairo Arabs determined to remain with us until we moved out of the Ghor, and accompanied us to Tel Abu Harari, from whence they and Kitchener proceeded to Cairo, carrying a reply to the letter of Sir E. Baring. I ought to mention that the Rev. Mr. Shapira, of the Church Missionary Society, met me on arrival yesterday, and has been most kind in giving us assistance in various ways.

V.

January 17th, 1884.

My last letter to you was from Gaza, where we were sentenced to be shut up in quarantine for fifteen days. I telegraphed immediately to Lord Dufferin, on the recommendation of Mr. Moore, Consul at Jerusalem, to ask his Lordship to use his exertions for our release. Owing to his active and friendly interposition, we received notice of our

release on the fifth day. This was on Saturday morning, and we were soon in the saddle to visit Gaza and its environs, and also call on Rev. Mr. Shapira, and thank him for his unremitting attention. Next day, after Divine Service in the tent, we started on our journey to Jaffa, which we reached the day following, and put up at the hotel in the German settlement. This enforced visit to Gaza must not be considered in any way as loss of time, as far as the journey itself is concerned; it enabled Kitchener and Mr. Armstrong to join up the survey to that of Southern Palestine, where it terminates at Beir-es-Seba, and it gave me the opportunity of making a geological traverse of Southern Palestine. The coast journey from Gaza to Jaffa was also of much interest to the whole party. We reached Jerusalem on Wednesday evening (9th), having slept the previous night at Ramleh, at the hotel kept by another German settler, the quarters being clean and comfortable. The ascent into the central tableland of Judæa was most interesting to us all, both on account of the geological and botanical observations it enabled us to make, and connected with our subsequent expedition down to the Jordan Valley has enabled us to make a complete traverse of what may be called the central portion of Palestine. Our journey northwards to Beyrout will complete a third traverse (Sea of Tiberias to Haifa), as well as enabling us to see much of the interior of the country. This exactly falls in with my original plans. We have been most kindly received by Mr. Moore (H.M.'s Consul), Dr. Chaplin, and several other friends of the Palestine Exploration Fund, including the American Consul, Dr. Merrill. On account of pressure of time, we have been obliged to abandon the proposed expedition into Moab, and have contented ourselves with a descent into the Jordan Valley, from which we have just returned. Our plans for the future are as follows:—

We propose to leave this on Monday morning, 21st, for Beyrout, by the Sea of Galilee, Samaria, Mount Carmel, and thence northwards by the coast road. This journey will occupy about fifteen days, and we hope on arriving at Beyrout to find a steamer which will take us to Constantinople. The quarantine, which has now been in operation for several months, has upset everything—paralysing trade, and rendering communications with other countries uncertain. There is now a prospect of its termination, and we have reason to believe that Lord Dufferin's exertions on our behalf have contributed to this much desired result. Under these arrangements we hope to reach London about the middle of February. We have despatched boxes of specimens from Jaffa, and Mr. Armstrong will take charge of some of the instruments which were brought out by us. He is now busily engaged in plotting the triangulation, and, I believe, intends to proceed to Cairo, when it is in an advanced state, in order to confer with Kitchener before returning home.

VI.

23rd January, 1884.

Our expedition has been brought to a stand in a most unexpected manner. We have been snowed up in the Sacred City since Monday, and will be unable to move till the day after to-morrow.

We had returned on Friday from our expedition to Jericho and the Lower Jordan Valley, and had everything prepared for an early start on Monday morning northwards to Beyrout, when Bernhard Heilpern came to our bedroom doors about 7 a.m., saying, "You need not get up, gentlemen ; you cannot move—snow is a foot deep already." And so it was ; and the fall continued during Monday and part of Tuesday, till it reached 2 feet and over in depth, and rendered all egress impracticable. Even the best road in Palestine, that is, from here to Jaffa, has been closed and the telegraph wire broken. The fall of snow was accompanied on Tuesday by a terrific gale from the west. Trees have been uprooted or broken and much damage done. However, a thaw set in last night, and continued to-day, and the weather now promises to settle. But a fourteen days' journey on horseback, over mountains and valleys, and sleeping in tents by night, is out of the question now. Even if practicable (which is doubtful) I feel I should not be justified in exposing our party to such a risk to their health. The country will be flooded for some days, the rivers swollen, and the air cold and damp in the extreme.

I have arranged, therefore, to proceed to Jaffa the day after to-morrow, when we hope the road will be practicable, and take the first boat we can get to Beyrout—thence return home *viâ* Constantinople. Even did time permit, there would be little use at *the beginning* of the winter in remaining here with the prospect of completing a survey which could only be properly done in good weather. This we might have done had it not been for our two detentions : one in the Ghor for ten days, waiting for horses from Jerusalem ; the other of five days in quarantine at Gaza. This is our third forcible detention since entering Palestine, and perhaps the least to be expected—to be snowed up in Jerusalem !

The results of our expedition, however, are not materially marred by this unlooked-for obstacle. The geology of the northern portion of Western Palestine is already pretty well known, and a *reconnaissance* would not have resulted in any material alterations (as I feel sure) of Lartet's map. Our excursion to Jericho, Mar Saba, Bethlehem, &c., together with our previous traverse of Southern Palestine, have enabled me to obtain a good knowledge of the structure both of Central and Southern Palestine. Of our previous work in the district of the Wâdy el Arabah and the Sinaitic peninsula I need not say anything here.

NARRATIVE OF AN EXPEDITION THROUGH ARABIA PETRÆA, THE VALLEY OF THE ARABAH, AND WESTERN PALESTINE.

By Professor Hull, LL.D., F.R.S.

(Geologist-in-Chief.)

The work of the Palestine Survey, which had been partly completed in Moab by Captain Conder, R.E., having been interrupted through the opposition of the Turkish Government, the Executive Committee of the Palestine Exploration Fund determined to undertake a geological reconnaissance of Western Palestine and the Jordan Valley, in accordance with the programme of work to be done under the auspices of this admirable Society. The Topographical Survey of Western Palestine had now been completed and published, so that the time seemed ripe for investigating the physical phenomena of Western Palestine, the Valley of the Jordan, and of the deep depression in which lies the Salt Sea.[1] An offer to undertake this exploration having been made to me by Colonel Sir Charles W. Wilson, on the part of the Executive Committee of the Palestine Exploration Fund, I consulted with some friends regarding the nature of the countries to be traversed, climate and other matters; and having received sufficiently encouraging replies, I gladly accepted the offer, and began preparations for carrying it out:—the Lords of the Committee of Council having been so good as to grant me three months' special leave of absence from my official duties in Ireland.

I had long taken a deep interest in the physical history of Palestine. I had read nearly everything that had been written on the subject, including the great work of M. Lartet, the geologist attached to the expedition of the Duc de Luynes, and had even gone so far as to deliver a public lecture on the physical history of the Jordan Valley and the Salt Sea in the theatre of the Royal Dublin Society.[2] Little did I think, when delivering that lecture, that I should have an opportunity in a few months' time of testing the correctness of my views by actual observation on the spot! Such, however, was the case; and within a few weeks I was busily engaged in my preparations for departure for the Holy Land.

It was of first importance to choose suitable companions. The Committee kindly allowed me to select an assistant; and I gladly accepted the

[1] I prefer this name to that of the "Dead Sea," a name of much later origin, and originating in a misconception. The name "Salt Sea" (Gen. xiv, 3) is peculiarly appropriate to an inland lake of such intense salinity, and was in use at the time when the Pentateuch was written. The Arabic name for this lake is "El Bahr Lut," the Sea of Lot.

[2] An abstract of this lecture appeared in *Nature*, March, 1883.

offer of my son, Dr. E. Gordon Hull, to accompany me in that capacity, and also as honorary medical officer to the party. Captain Kitchener, R.E., then in Egypt, was nominated by the Committee to undertake the topographical survey of the Wâdy-el-Arabah, and northwards as far as the shores of the Salt Sea, so as to join up the triangulation with that of the Ordnance Survey of Palestine ;[1] and Mr. Armstrong, formerly Sergeant-Major R.E., who had taken part in nearly the whole of the previous survey, was appointed his assistant. It is scarcely necessary for me to say with what pleasure I received the tidings of the appointment of Captain Kitchener as my colleague. I was aware of his great experience in the work of the Palestine Survey, of his knowledge of the character and customs of the Arab tribes amongst whom we were to travel, and of his ability to converse in their language. All this inspired an amount of confidence of ultimate success I should not otherwise have felt, and the result proved that my confidence was well founded. In matters connected with our dealing with the Arabs I readily deferred to his judgment, which I always found to be judicious, while he often acted as spokesman in our negociations with the Sheikhs.

It was a matter of first importance to the safety of the party, and towards the attainment of our objects, that great prudence should be exercised in dealing with the Bedawins ;—at least we supposed so. The unhappy murder of Professor Palmer, Lieutenant Gill, and their companions, by the Bedawins of the Tîh, was still fresh in our memories, and sometimes caused a cold thrill when I thought thereon. Some of my more judicious friends, when speaking with me on the prospects of my journey, accompanied their congratulations and good wishes with gentle hints to beware of the treacherous Bedawin, and "to remember the fate of Palmer." They little thought, kind souls, how they were adding to my own mental anxiety, which I trust I did not allow any one to share, or even suspect. I kept it under lock and key, along with Besant's narrative of that horrible tragedy, and insisted, in reply to my friends, that the circumstances of Professor Palmer and myself were entirely different, which was undoubtedly the case, and that in the capture and execution of the murderers the Bedawins had received a lesson which they would not readily forget—such being the view that my friend and counsellor, Sir Charles Wilson, had endeavoured to impress upon me.[2]

As will be seen in the sequel, both the scope and area of the Expedition

[1] The Palestine Survey Map, published on a scale of $\frac{3}{8}$ of an inch to one statute mile, takes in the western shore of the Dead Sea as far as Sebbeh ; from this the southern boundary runs along Wâdy Seiyal, Wâdy-el-Milh, Wâdy-es-Seba, and the Wâdy Ghuzzeh, to the shore of the Mediterranean Sea, south of Gaza.

[2] The matter is very fully gone into in Besant's "Life of Professor Palmer." There can be no doubt, as we afterwards learned on the spot, that Palmer's death was planned by the agents of Arabi Pasha, and that the Arabs, who were to a man on Arabi's side, were only carrying out the orders they had received from Egypt.

were considerably enlarged as time went on. In the letter[1] of Mr. Glaisher, F.R.S., Chairman of the Executive Committee, in which the route and objects to be kept in view were definitely settled, it was stated that we were to proceed overland to Egypt, where we should be joined by Captain Kitchener, and from thence strike into the Desert of Sinai, which we were to traverse as far as the head of the Gulf of Akabah. From thence we were to proceed northwards along the whole length of the Wâdy-el-Arabah, to the southern end of the Salt Sea, and proceeding along the western shore as far as Ain Jidi (Engedi), turn up into the tableland of Judea to Hebron, from whence the officers of the Engineers were to return to Egypt, while the other members of the expedition were to proceed to Jerusalem, and organise another expedition into the Jordan Valley, Moab, and Northern Palestine. It will thus be seen that a tour of unusual extent and interest was placed within our reach, including countries and places second to none in importance from their sacred associations, their historical antecedents, and the physical conditions under which they are placed. The Committee also took care that everything should be done for the comfort and safety of the travellers. The Egyptian Government, through the Foreign Office, offered an escort as far as Akabah, the limit of Egyptian territory; but as we had no reason for apprehension from the Arabs in the Sinaitic peninsula, we did not think it necessary to avail ourselves of the kindness of Cheriff Pasha, who had offered through Kitchener to give us every assistance in his power. The district where an escort of soldiers was likely to be of use lay between Akabah and the Salt Sea, and here the Egyptian escort would be unable to accompany us.

The party as it now stood consisted of four; but it was obviously desirable that it should include a naturalist, who should make notes and collections of the representative fauna and flora of the district to be traversed; and of a meteorologist, who should also make observations on the temperature, rainfall, and aneroid determinations of the levels of special points along our route. I therefore cast about in my mind for volunteers having the necessary time and qualifications to undertake those departments of research, and was most fortunate in both instances. Mr. Henry Chichester Hart, who joined us in the former capacity, had been personally known to me for several years as an ardent investigator of the flora of Ireland, having made several reports on the botany of special districts of that country, under the auspices of the Royal Irish Academy. He had also acted as Naturalist in the expedition of Sir George (then Captain) Nares, R.N., to the Arctic regions, which had penetrated as far north as 83° 14′ lat. To these antecedents Mr. Hart added uncommon powers of enduring bodily fatigue; and he proved a most agreeable addition to our party, owing to his imperturbable good humour, and the extent of his knowledge on natural history subjects. Mr. Reginald Lawrence, Associate of the Royal College of Science, Dublin, who accepted my invitation to act as Honorary Meteorologist to the Expedition, had also been my personal

[1] Of date 7th July, 1883.

friend for several years, and from my knowledge of his antecedents and ability I felt sure he would prove the right man to complete our quorum; and in this I was not disappointed. Never, I feel sure, were six persons more happily associated in an undertaking of this kind. Throughout our whole tour the utmost good feeling prevailed amongst the members; each took an interest, not only in his own department, but in those of the others, and tried to assist in them as opportunity offered. My son, having had considerable practice in photography, undertook to bring home photographs of the district through which we were to pass, and through part of which no photographer had as yet penetrated. Our expedition was thus tolerably complete in all its branches.

It had been suggested to me by my friend Dr. W. Frazer, of Dublin, that our progress might be facilitated, and our comfort increased, if the travelling arrangements were entrusted to the well-known firm of Messrs. T. Cook & Son. This suggestion I mentioned to the Secretary to the Palestine Exploration Fund, who had an interview with Mr. John M. Cook, the managing partner of the firm, at the head office, Ludgate Circus. The result of this interview was most satisfactory, as Mr. Cook offered to undertake the whole of our travelling arrangements, whether by land or sea, to provide tents, food and attendants, and to advance money when needed to the members of the party. All this was to be done "without the slightest profit, directly or indirectly, to the firm," owing to the interest which Mr. Cook personally took, not only in the Palestine Exploration Fund, but also in the Expedition which it was about to send out.

This handsome offer on the part of Mr. Cook was accepted by the Committee, whose energies were now to be restricted to providing the instruments for carrying out the scientific work of the Expedition.

Several days were spent in London by all the members of the party in making preparations. Theodolite, compasses, aneroids, thermometers, photographic apparatus, guns, revolvers, ammunition, geological hammers, maps, suitable clothes, stationery, and many other articles had to be provided, packed, labelled, and despatched. Mr. Armstrong was to follow in a few days by steamer from Marseilles, and join us in Egypt. My son and I met the Committee in Adam Street for a parting consultation and farewell, which was very warmly given us by the Chairman, Mr. Glaisher. On the day following we all dined with my brother-in-law, the Rev. H. Hall-Houghton, at the National Club,[1] Whitehall, and on Saturday we took our seats for Dover in the train at Ludgate Hill Station, Mr. Cook being on the platform to see us off, and wish us "a good journey." We crossed the "silver streak" during an interval of comparative tranquility, and in a boat, fortunately, other than the "Calais-Douvres," so reached Paris in the evening, without having had to undergo the usual passage experiences.

[1] Mr. Hall-Houghton is a member of the General Committee of the Palestine Exploration Fund, and was present at the meeting of the Special Committee on the previous day.

We left Paris for Milan by the "through train," *viâ* Bale, on Sunday evening. Our train was to have been in connection with another leaving Bâle about noon, but as we approached this city our progress gradually approximated to a walking pace. With a view, doubtless, to reciprocity, as we got impatient the train slackened pace, with the not unexpected result that we were late for the train into Italy. The day was wet and cold, and in order to pass a part of it in motion we took the next train to Lucerne, hoping for a change. But this beautiful city was draped in sombre garb. A canopy of cloud shrouded from our view the mountains, while a ceaseless drizzle damped our desire for sight-seeing. Some of the party, however, visited the remarkable "glacier garden" near the city; and after dinner at the hotel we were glad to find ourselves again in the train, notwithstanding the disappointment of being obliged to cross the Alps at night. But though night, all was not dark. As we ascended the mountains towards the St. Gothard Tunnel the canopy of cloud melted away, and about midnight the moon and stars shone forth, illuminating the snowclad heights on the one hand, and throwing into still deeper shade the ravines and frowning precipices along which we threaded our way. On issuing forth from the tunnel on the Italian side, and as break of day approached, we found the sky clear, and we descended into the plains of Lombardy amidst a blaze of sunshine, which cheered our spirits; and under such circumstances we drove through Milan, visited the Cathedral, and in the afternoon took our seats in the train for Venice, which we reached after dark. It was a new experience for all of our party but myself to find ourselves seated in a gondola, and piloted along through the canals—under numerous archways, and alongside the dark, mysterious walls of houses, churches, and palaces, to the steps of Victoria Hotel, where we were soon comfortably housed, to await the departure of the P. and O. steamship "Tanjore" for Egypt on the following Thursday.

We endeavoured to put our time to good account, and see as much of the "Queen of the Adriatic" as possible. I found that my former visit had in no way lessened the pleasure of a second visit, and I saw and heard much that had escaped me previously. Engaging the services of a very efficient guide, who informed us that he had accompanied Mr. Ruskin when collecting his materials for "The Stones of Venice," we made a very full examination of the Palace of the Doges, the Duomo of St. Mark, and other sights of this wonderful city; and in the evenings we sipped our coffee under the collonade of the Piazza, listening to the music of a very fine military band, or gazing with wistful eyes into the brilliantly lighted shops, so eminently calculated to elicit the last lira from the pocket of the beholder. Though we made some purchases, I fear our stay in Vienna did not add materially to the wealth of the city. We recollected there were bazaars in the Eastern cities we hoped to visit with objects of still greater novelty than those even of Venice.

Owing to the quarantine regulations, the "Tanjore," Captain Briscoe, was unable to come up to the Grand Canal, so we left Venice in a steam launch, in which we were conveyed down through the lagoons to the place

in the bay where our good ship rode at anchor. We passed several islands and forts, amongst others one built by the Genoese in the fourteenth century. Several others, rising from the lagoons, were erected by the Austrians in 1859–60. These lagoon islands are in some cases of vast extent, and are covered by the waters of the Adriatic when the wind blows strongly from the south. In 1875, on the 5th January, a south wind banked up the waters till they overflowed most of the islands, and for two days the Piazza of St. Mark was submerged to the depth of from 4 to 5 feet.

We found the "Tanjore" crowded with passengers when our contingent had come on board. These included General Sir Evelyn Wood and party returning to Egypt, and several persons bound for that country, as well as for Cyprus and India, whose company we enjoyed till we reached Port Saïd. In the evening we weighed anchor, and steamed down the nearly smooth waters of the Adriatic, often out of sight of land, but sometimes with distant views of the coasts and islands of Italy on the one hand, and of Dalmatia on the other. One of the islands, called "The Half-way Rock," rose as a sharp ridge, apparently of limestone, from deep water.

Early on Saturday morning, we steamed into the harbour of Brindisi as far as the coaling depôt of the P. and O. Company, and we had all to turn out of our berths pretty early, in order to pass muster before the medical officer, who was pleased to give us "a clean bill of health," without a very strict *diagnosis* of each case. On this and a subsequent occasion I had an opportunity of observing the absurd nature of quarantine regulations. Like the passport system, that of quarantine only seems to give to travellers gratuitous trouble and expense, without accomplishing the object for which it is supposed to be instituted. How this was illustrated in our own case will be noticed in the sequel. In the case of the "Tanjore," it was so long since she had left Egypt (from which the cholera had almost disappeared) that any case on board would have manifested itself long ere she had entered the Venetian waters; yet she was not permitted to enter the harbour, and her passengers coming from the west and north of Europe, where cholera had never entered, were subjected to inspection on reaching Brindisi![1]

We spent Saturday and Sunday in this port, awaiting the arrival of passengers and mails for Egypt and India. The time was agreeably occupied in visiting the town and surrounding country in company with one or two friends, amongst whom I may be allowed to mention the name of Mr. Sinclair, R.E., Secretary to the Governor of Cyprus, Sir R. Biddulph. Both the plants and animals of this neighbourhood indicate

[1] That Egyptian cholera comes, not from India, but from Mecca and Mina, and is generated amongst the thousands of pilgrims who annually are collected for several days within an exceedingly limited area, where they are subjected to the effects of breathing foul air, drinking corrupted water, and living in filth and privation, will be conceded upon reading the "Rapport sur la dernière épidémie de Choléra à la Mecque," in the *Gazette Médicale d'Orient*, September, 1883, by M. le Dr. Abdur-Rassack.

an approach towards those with which we were afterwards to become familiar in Egypt. The low cliffs of the shore, formed of yellow tufaceous limestone, abound in shells of late Tertiary age,[1] some identical with those of the adjoining waters, while the ground swarmed with bright green lizards, beetles, and ants; butterflies, wasps, and flies also floated about in the air, giving abundant occupation to Mr. Hart in collecting specimens and noting their habits. One peculiar species of wasp here lays its eggs in little balls of mud, in which the larvæ may generally be found.

The sub-tropical vegetation of the district is remarkably rich. Here the graceful date-palm waves its plumes aloft, amidst groves and gardens of olive, figs, oranges, vines, mulberries, and stone-pines. The eucalyptus has been introduced and planted extensively along the roads, while the hedgerows are formed of the bristling lines of the large cactus (prickly pear) and aloes. The cotton-plant is cultivated in ground which can be flooded, while oleanders, myrtles, and other foreign plants adorn the gardens.

The town itself, the ancient Brundusium, visited but scarcely seen by thousands of travellers annually, is of much interest, from its position and history. It stands on an inlet of the Adriatic, and the harbour, of great importance in Roman times, is capable of holding large ships. The harbour is connected by a causeway with a fortification, or castle, standing on the summit of a cliff to the south of the town, and in a commanding position. This is now used as a prison, and the inmates are usefully employed in a variety of reproductive works, such as carpentry, smiths' work, tailoring, &c., at which we found them busy when visiting the place on the afternoon of our arrival. There is a ditch and wall, with towers and gates, erected by the Emperor Frederick Barbarosa, probably on the site of more ancient structures, and amongst the remains of Roman work are two marble pillars, one broken, at the end of the Appian Way.

The country inland consists of an extensive plain, about 200 feet above the sea, richly cultivated in crops of maize, wheat, and cotton, with farmsteads surrounded by gardens of olives, figs, and vineyards. This plain is traversed by the high roads to Rome and Naples, and several ancient fountains, doubtless coming down from Roman times, still afford water for thirsty men and animals by the wayside. The plain, formed of shelly limestone, beds of marl, clay, and sand, was at a very recent geological period the bed of the sea, and its uprising has added thousands of square miles to Italian territory.

On Sunday morning Captain Briscoe held Divine Service in the cabin, and read the prayers and lessons with that solemnity and effectiveness sometimes wanting in the more regular services of the Church; and at 3 o'clock on Monday morning we steamed out of the harbour.

We soon passed from the deep indigo-blue waters of the Adriatic to those of the Mediterranean, which are of a greener tinge, not unlike those of the Atlantic. The voyage was very agreeable, and we only once came

[1] Pliocene according to Collegno's map.

in for a gale, which did not last very long. The view from the deck of the "Tanjore" on Monday towards the north-east was always striking, even at the distance from the land at which we sailed. The bold and rocky mountains of Albania stretched away for miles from left to right, beyond which, at a distance of over thirty miles, might be seen the mountains of Greece, the sun lighting up the peaks and lines of escarpment of white limestone of Epirus, with the island of Corfu in the foreground. Towards evening the coast of Cephalonia and Zante came in sight.

Awaking next morning, we found ourselves approaching Crete (Candia) and now a stiff gale was blowing from the north-east. Rain also was falling, and we began to feel tolerably miserable. The breakfast table was not quite as fully occupied as usual, and some of us found it convenient to retire to our cabins before we had had time to partake of a hearty meal. However, about tiffin the gale moderated, and we returned to the deck to watch the scenery of the island, along whose coast we were sailing at a distance of about twenty miles. This island (as is well known) is mountainous, the peaks of Mount Ida rising to 7,674 feet, and on this day cloud-capped; the sides being cut into deep ravines, clothed with a slight forest vegetation. The sunshine effects were sometimes very beautiful, the higher elevations being so brightly white as to resemble the snow-clad summits of the Alps. Towards evening the sky presented a grand spectacle. Overhead the stars shone forth from the dark blue sky, but from time to time the clouds which hung over Crete were illumined by brilliant sheets of lightning often bursting forth from behind the mountains like the flames of a volcano in active eruption. This scene lasted several hours, while brilliant meteors from time to time streamed across the heavens. The beauties of the sky were so enticing, and the air so balmy, that it was with regret we turned into our berths late at night.

Land now disappeared from view, and we bid farewell to Europe; the blue ring of the horizon was unbroken during the next day. After sunset I went to the bow of the ship to watch the effect produced by the medusæ when tossed up in the foam of the ship's prow. It is a sight full of beauty. Each sheet of white foam, as it was cast aside by the ship's side, was lighted by a thousand silver sparks caused by the phosphorescence of these pretty little creatures, quite invisible to the eye by daylight. I was told that sometimes dolphins may be seen disporting themselves amidst the shoals of medusæ, but on this occasion we were not so fortunate as to see any. On the 1st November we entered Port Saïd at 10 a.m., and for the first time touched the shore of the African continent; I trust, with thankful hearts for all the mercies we had received.

Slowly we steamed up the harbour towards our anchorage, passing a line of steamships of several nations, chiefly British. On passing an Egyptian man-of-war we received a salute (presumably in honour of General Sir E. Wood, but the question has not been decided !) the men standing all along the bulwarks with hand to hand horizontally extended, looking like so many human crosses clad in white, or like shirts hung out to dry. Soon after, a state barge came alongside to take Sir E. Wood and

his party off for Ismailia. It was unfortunately completely filled, so that there was no room for us—doubtless a matter of profound regret to the General, who took his departure amidst much shaking of hands and waving of handkerchiefs. Leave-taking now became general all round. Our passengers broke up into parties for their respective destinations, and at length we tumbled overboard into a boat and rowed for land with the gloomy prospect of a night sail up the canal in a passenger steam-barge amidst a crowd of unsavoury Moslems. Our baggage was carried to the hotel by porters whose powers of endurance seemed little short of those of mules or camels. Mountains of heavy baggage, calculated, one would have supposed, to crush them to the earth, were piled on their backs. All hands helped the men to their feet, and off they started for the Custom House amidst the shouts and gesticulations of their comrades. We were, however, spared the annoyance of unpacking our baggage; the Director-General of Customs having, through Mr. Cook's agent, sent instructions to pass all our baggage and effects unexamined.

During dinner we made a discovery which relieved us of our difficulty. We learned that a P. and O. steamer was to leave Port Saïd at 4 o'clock for Alexandria, and we resolved to take passage in her, and by this way to go on to Cairo. The "Dakatlieh" was airy and not very full of passengers, and after the close packing of the "Tanjore" we felt very comfortable indeed. We had a good night's rest, and were up betimes to view the African coast, evidences of which first appeared in the distant lines of feathery palms. We had been coasting for many miles off the Delta of the Nile, and all along our track the waters of the Mediterranean had changed their ordinary deep blue into a light greenish tinge, in consequence (as I was informed by Mr. Le Mesurier, of the Egyptian Railway Department) of the influx of the Nile waters.

It is unquestionable that the Nile carries down large quantities of mud into the Mediterranean, which is taken up by the prevalent eastward current, and finds its way into the harbour of Port Saïd, where dredging operations have constantly to be carried on at heavy cost in order to keep the channel of the required depth. The Damietta branch of the Nile may, from its position with reference to Port Saïd and the ship-canal, be considered the more immediate cause of the silting up of the canal bed.

This source of expense and danger to the navigation Mr. Le Mesurier proposes to meet in the following way[1]:—It will be observed on referring to a map of the district, that between the harbour of Port Saïd and the Suez Canal on the one side, and the Damietta branch of the Nile on the other, lies the great inland lake of Menzaleh, through which the canal has been carried, chiefly by dredging, for a distance of twenty-seven miles. The portion west of the canal still remains under water, but that to the east is now dry. This western portion, covering an immense area, Mr. Le Mesurier proposes to convert into a great precipitating basin for the Damietta branch,

[1] The project I only give in outline, as kindly communicated to me by Mr. Le Mesurier himself, during our stay on board the "Tanjore."

the effect of which would be *ultimately* to convert this tract into a vast field for agricultural purposes, while the waters which would pass off into the Mediterranean, being to a great extent deprived of their silt, would cause *immediate* relief to the harbour of Port Saïd, and that part of the canal which opens into it. This is a grand scheme, calculated to be of benefit both to the agricultural and commercial interests of Egypt. I can only express the hope that Mr. Le Mesurier may have the happiness of seeing it one day put into execution.

On approaching Alexandria, a pilot came on board to steer us through the intricate channel by which the harbour is entered; and on rounding the point of the large breakwater, we came in view of the city and its harbour[1] all at once, a view calculated to afford both pleasure and surprise,—pleasure at its beauty; surprise, that a harbour and city so recently the scene of a tremendous bombardment should, at first sight, present such slight traces of the conflict. In front lay the city, built on a gradually-ascending slope, and in the background to the left the elevated and fashionable suburb of Ramleh. On the left of the harbour, the Fort of Pharos, partly in ruins, and lighthouse, the Palace of Ras-et-Teen, white and glistening in the sunshine, and surrounded by pleasant gardens. On the right, the barracks, fortifications, and lighthouse and other public buildings; and in the distance, the noble column known as "Pompey's Pillar." The harbour itself was gay and busy; ships of many nations lay at their moorings, both merchantmen and passenger steamships; while the beautiful yacht of the Khedive swung at anchor in the centre. The surface of the water swarmed with smaller craft and barges, amongst which was one to convey on shore Her Majesty's Consul, Mr. Cookson, who had made the passage with us from Suez, and whose acquaintance we had the pleasure of making. He kindly insisted on sending us ashore in his barge, and told off his *khawass* to accompany us to our hotel, and afterwards to conduct us over the palace and fortifications. Owing to this kind action on the part of Mr. Cookson, we were enabled to see the principal sights of this ancient city to the best advantage; nor did his servant leave us till he had seen us off in the train for Cairo in the evening.

We found much of the city in ruins—ruins caused by the mob, not by foreign guns; and, as much uncertainty prevailed as regards the future of Egypt, restoration and rebuilding were proceeding but slowly. It only required the British Government to make the announcement that at least a contingent of our troops should be allowed to remain in Egypt for the preservation of order to induce capitalists to come forward and commence building. But this the Government had hesitated to do, and confidence in the future was consequently shaken. Who that knows Egypt can doubt that a permanent protectorate, supported by a sufficient British army, would prove a blessing of incalculable value to the country?

No object in Alexandria interested me more than the noble monolith

[1] The city has two harbours—the western or Eunostus, and the eastern, or New Port. We entered the western.

known as "Pompey's Pillar." The name is misleading, as one naturally associates it with that of the great Roman General; but, as the Greek inscription shows, it was erected in honour of Diocletian during the prefecture of Pompeius, in the year 302.[1] But whatever its origin, its immense size and beautiful proportions strike the beholder with admiration. Like most of the Egyptian monoliths, it is of red porphyritic granite, 73 feet in length, with a circumference of 29 feet 8 inches, highly polished, standing on a pedestal, and surmounted by a capital 16 feet 6 inches in diameter, giving a total height of very nearly 100 feet to the monument. It may well be doubted whether a monolith of this description belongs to the epoch of the Roman occupation. It is far more likely that its origin dates back to that period of very ancient Egyptian art which gave birth to the obelisks, the Sphinx, and the Great Pyramids. Its original birthplace was amongst the granite quarries of Upper Egypt, and whether hewn fresh from the native rock, or taken from some more ancient structure, it was a work of no small skill to transport it from its original site and erect it upon the elevated platform of solid limestone from which it is visible for miles in almost every direction.

It is to be hoped that Pompey's Pillar will defy the cupidity of foreign states. Within a few years the two companion monoliths of the ancient city have been carried away: one to adorn the banks of the Thames, the other those of the Hudson. Who that visits the modern cities of Europe, and witnesses the monuments of ancient Egyptian art, of which that country has been stripped, in order that *they* may be adorned, can restrain a sigh of regret at the spoliation of the land where art of the grandest conception had its birthplace and its maturity while that of Greece and Rome was still in the future?

We left Alexandria in the afternoon, in company with an officer of the army of occupation, and travelled along a route, to us, new and full of interest. The railway at first passes along enormous mounds of broken pottery. And here I may mention that in the East, often when all traces of buildings have disappeared, fragments of pottery remain to attest the former existence of buildings. The reason of this is that pottery is almost indestructible. Houses, temples, churches, may have been laid in ruins, the materials broken up and carried away, but a "potter's vessel" when once broken is useless for any purpose; no one cares for it, and it is left to add to the accumulations which take place at every town or village.

Soon we emerged on the Garden of Egypt, the fertile Delta of the Nile, without which, indeed, Egypt would be but a rocky or sandy desert penetrated by a deep gulf, as the Egyptian priests informed Herodotus was its original condition. Interminable fields of maize, cotton, sugarcane, and other produce cultivated by the fellahin, succeed each other, irrigated by means of little water-wheels, sometimes worked by men, sometimes by bullocks, the water carried in little channels made by the feet, and allowed when required to flow over the beds containing seed; all probably very

[1] The inscription is given in Murray's "Handbook for Egypt," Part I, p. 132.

SKETCH MAP
to show the
ROUTE OF PROF. HULL'S PARTY
1883-84.
English Miles.
10 5 0 10 20 30 40 50 60
Route of the Expedition
32°
33°
34°
35°
36°
MEDITERRANEAN SEA
Damietta Mouth
Port Said
Suez Canal
R. Nile
Ismailia
Zagazig
The Bitter Lakes
Suez Canal
CAIRO
Pyramids
Suez
Moses' Wells
W. Sudur
GULF OF SUEZ
PLATEAU OF THE TÎH
Kala't Nakhl
W. Gharundel
W. Hamr
W. Nasb
Ain el Achdar
W. Berrah
W. Sheikh
Mt. Serbal
Mt. Sinai
J. Katarina
Camp (20 Nov.)
W. Zelagah
W. Biyar
Wel Ain
J. Aradeh
W. Gharundel
Camp (7 Dec.)
Camp
Akabah
GULF OF AKABAH
WADI EL ARABAH
J. Haroun (Mt. Hor)
Petra
Samrat Fiddan
E. Safieh
THE SALT SEA
R. Jordan
Sea of Gennesareth
Mt. Carmel
Shechem
Jaffa
Ramleh
Jericho
JERUSALEM
Askalon
Bethlehem
Pools of Solomon
Gaza
Beersheba
W. el Malh
RED SEA
Longitude East 33° of Greenwich
E. Weller.

much as in the time of Ptolemy, if not even earlier. Groves of the date-palm, with enormous clusters of ripe fruit, rose aloft above the level of the Delta, or formed small clumps near the villages.

The cultivation of the palm, and of other fruit trees, was largely extended by Mehemet Ali, who made a decree promising remission of a certain amount of taxation for each tree planted. This had the desired effect. On producing a certificate of having planted so many trees the fellahin had his taxes reduced. Some time after, when the work of plantation had been accomplished, the decree was repealed, and a tax was put on the trees—a financial operation both beneficial to the Government and to the cultivator, who enjoyed the fruits of his labour.

We passed several towns and villages of the fellahin ; of the latter nothing can be conceived more miserable as human abodes, in comparison with which a village in Connaught might be considered handsome. The houses consist of small mud cabins, huddled together, in which men, women, and children share the space with dogs, fowls, and pigeons. The cow or donkey does not require shelter at night in this part of the world, so is excluded from the home circle.

We crossed two branches of the Nile, each about as wide as the Thames at Kew, the water of which was as usual turgid. The water had fallen to 6 feet below its maximum, which it reached about the middle of October. The origin of the fine sediment which the Nile always carries in suspension, as well as of the rise and fall of the waters themselves, is now fully understood since the publication of Sir S. Baker's remarkable work.[1] Briefly stated, the origin is somewhat as follows :—The Nile below Khartoom consists of one undivided stream, but at El Damer, about 170 geographical miles lower down, it receives the waters of a great tributary, the Atbara, descending from the highlands of Abyssinia. This river undergoes the most extreme transformations. During the early months of the year the waters are so reduced as sometimes to form only a series of great stagnant pools, in which are collected in very close quarters all the inhabitants of its waters, consisting of fishes, crocodiles, and huge tortoises. The banks, through a long line of country at the base of the mountains, are formed of masses of mud and silt, easily undermined, and liable to fall into the waters on the rise of the river. About June tremendous thunderstorms, accompanied by a deluge of rain, break on the Abyssinian highlands. The waters of the Atbara rise with extraordinary rapidity, and descend with a roar like that of distant thunder, giving warning of the approaching deluge. Soon the channel is filled up with the flood, the banks of mud are undermined, and fall down in large masses into the waters, where they are speedily broken up and converted into silt, the finer portions of which are carried along, and finally enter the Nile, and impart to its waters much of the turgid character for which they are known in Lower Egypt.[2] The

[1] "Nile Tributaries of Abyssinia," p. 52.

[2] A good deal of sediment is also brought down by the Bahr-el-Azrek, or the Blue Nile, some of the sources of which also are found in the Abyssinian highlands.

river now becomes a great fertilising agent, and when allowed to flow over the cultivated fields, imparts the necessary moisture, so that under the influence of a powerful sun from two to three crops can be annually gathered off the land; giving rise to an extraordinary amount of natural wealth. That this sediment originally caused Lower Egypt to be reclaimed from the Mediterranean Sea was known to Herodotus, who calls this country "the gift of the Nile."

Arrived at Cairo one of the first arrangements to be made is for a visit to the Pyramids, always a memorable event in any man's life. After all that has been written upon these grand monuments of Egyptian art it might appear presumption to attempt to add even a small quota of information; still, at the risk of such an imputation, I venture to give a brief account of my own impressions.

The drive out from Cairo is very charming. Having crossed the river the road runs along its bank for several miles under the shade of overhanging branches of the Nile acacia, and fine views of Cairo and of the range of the Mokattam Hills behind are obtained. Here we happened to meet the Khedive and his retinue on returning from his morning drive, and further on we turned in at a gate leading past the palace built for the Prince of Wales, through groves of oranges, lemons (just beginning to ripen), fields of maize, sugarcane, and cotton. Another turn brought us to the causeway, which runs in a straight line westward towards the base of the platform on which the Pyramids of Cheops and Ghizeh are built, and from which the first view of them is obtained. The first view will probably disappoint the traveller, for the distance is greater than he thinks (owing to the tranparency of the air); consequently the structures appear smaller than is really the case. The avenue itself is three miles long, in a perfectly straight line, over-arched by acacia trees, whose shady boughs, laden with large fruit-pods, afford a grateful shade from the sun's rays.

The best view of the Pyramids is obtained from a part of the causeway road, about half a mile from the platform on which they are built. From this point the four principal Pyramids are seen ranged in line; that of Cheops, or "the Great Pyramid," in front; that of Ghizeh next, and two much smaller ones in the rear. In the background is the ridge of sand which marks the line of the desert, stretching on either hand for miles.

It is well known that these great tombs of Egyptian monarchs are built on a platform of the nummulite limestone, which was partially levelled for the foundation, but which has never been entirely cleared from the accumulated rubbish. This platform of solid rock marks the limits of the Nile Valley. On driving up to the summit of the platform you are immediately beset by a crowd of importunate Arabs, who have mastered sufficient of your language to make you understand that independent action is out of the question, and that you may as well resign yourself submissively into their hands. Having done so, and decided whether you will ascend to the summit or descend into the vast interior, you get breath to cast your eyes upwards along the face of this jagged mountain

side, *as it now appears*, and to appreciate in some measure the vastness of its proportions.

The Pyramids you behold are, however, very different from those of the time of Herodotus. In the first place you perceive that the Great Pyramid is truncated, instead of ending in a point like its neighbour, that of Ghizeh. Again, you observe that the apex of Ghizeh is cased in smooth stone while the whole exterior of the Great Pyramid is formed of step-like rows of masonry. It was not thus that the Egyptian architect handed over his great work to his monarch ; for in 1837 Colonel Howard Vyse discovered two casing stones in position, which may now be seen. They are blocks of limestone, 8 feet 3 inches long and 4 feet 11 inches in perpendicular height,[1] and indicate that the whole exterior was encased by polished blocks, giving it a perfectly smooth and glittering surface, well calculated to protect the building from injury, and to give it an aspect of finish and completeness very different from that which it now presents.[2]

The act of vandalism which has deprived the Pyramids of their outer casing was perpetrated by the Caliphs, who carried away the stones to build the mosques of Cairo ; the result being that the general appearance of the exterior gives one the impression that this most ancient of buildings is rapidly disintegrating and destined to fall to pieces in the course of ages. This is no mere fancy. Let any one examine closely the condition of the outer walls, and he will find that they are penetrated by cracks and little fissures in all directions, along which the stone is crumbling away. These are due, I believe, to the expansion and contraction occasioned by the great changes of temperature between day and night ; and the consequence is, that when a thunderstorm breaks over the district, as sometimes happens, the loosened pieces are washed down, and fresh surfaces for the sun to act upon are exposed. In course of time, therefore, the Great Pyramid, as well as that of Ghizeh,[3] must become a ruin ; and for this the only remedy is re-casing.

All our party but myself elected to ascend the summit—I to visit the interior, in hopes of recognising some of Professor Piazzi Smyth's marks and determinations ; so, delivering myself into the hands of four Arabs, I dived into the dark passage. This is an undertaking which (as Miss Martineau observes) no one should attempt who is at all of a nervous temperament. You soon begin to repent of your choice when you find yourself within the dark walls, descending deeper and deeper, two savages before and two behind. Occasionally they stop, and put the question, "How you feel, sir?" to which, of course, you reply, "Oh, quite well!" Inwardly you *feel* quite the reverse, but it is no time to allow the slightest hint of timidity to escape. At length, after an indefinite descent, and another equally indefinite ascent, you find yourself in the great interior

[1] Murray's "Guide," Part II, p. 246.

[2] It is stated by Abd-el-Lateef that the casing stones were polished and covered with inscriptions.

[3] The upper part of Ghizeh is still cased with its original polished blocks ; hence its apex is pointed.

called the "King's Chamber," dark and oppressive, notwithstanding the flickering of the candles which your guides carry; and now they take advantage of their opportunity: they demand *bakhsheesh*, produce various "*antiqua*," generally shams, and strive to make you purchase on the spot. Making a virtue of necessity, I promised bakhsheesh all round, and that I would make certain purchases upon getting to the open air, it being manifestly impossible to examine these articles with the aid of their gloomy light. This satisfies my tormentors, and after a hasty glance all round, we commence our outward descent, and at length emerge into the dazzling light of day. My guides again produce their "*antiqua*," demand their *bakhsheesh;* but now it is *my* time to make terms. Seating myself on a stone, I proceed to select what I wish, and to name my own price; and finally, with a franc each for *bakhsheesh*, send them about their business.[1]

The Pyramids are built of nummulite limestone—not hewn on the spot, but brought from quarries situated at the base of the hills ten miles above Cairo, on the right bank of the Nile. The quarries are of vast size, as I was informed by Dr. Schweinfurth; and one may see the tokens of the care exercised in selecting the stone, soft portions being left, the harder cut out for blocks. The lines drawn by the overseer for the workmen are also visible on the walls. The blocks were transported on a sloping causeway to the water's edge, floated across, and then hauled up a long similar causeway, still in existence, on the opposite side to their destination.

The Sphinx is, however, sculptured out of the native rock, and the horizontal lines of stratification are too plainly visible.[2] The head is of harder material than the neck, which is formed of softer and whiter strata. Every one must regret the defacement which this grand work of Egyptian art has undergone; but knowing the custom of Mohammedans to deface all objects which they consider idolatrous, it is not difficult to trace the cause for this act of barbarism.[3]

The so-called Temple of the Sphinx must excite the admiration of every beholder. It consists of a series of vast rectangular chambers, cut out of the solid limestone, with recesses for tombs. The walls are lined with massive blocks of the red granite of Syene, beautifully cut and polished, and fitting closely. One of the walls lies exactly north and south, so that when the shadow of the sun is coincident therewith it is noonday.

In this temple (as I was informed by one of the guides) Professor

[1] There are three execrable words which were constantly cropping up during our journey, and of which travellers should beware, viz.: "bakhsheesh," "antiqua," and "quarantina." The language would be improved if these were expunged from its vocabulary.

[2] Our witty, but not very accurate guide, Mark Twain, says the sphinx is made of granite!

[3] As witness the defacement of the greater number of the statues in the Museum of Antiquities, Constantinople.

Smyth spent much of his time when engaged in making his measurements for his well-known work.[1]

When passing through Alexandria we had the pleasure of making the acquaintance of that indefatigable traveller and excellent geologist, Dr. Schweinfurth, to whom Mr. Hart had a letter of introduction. Having arrived at Cairo just after ourselves, he kindly offered to accompany us on a visit to the Mokattam Hills, at the base of which the city is built, and from which the stone for the construction of the houses and public buildings has been chiefly obtained.

This range of hills, though of no great elevation (600 to 700 feet), forms a fine background to the city, as well as to the Valley of the Nile, owing to the abrupt and scarped face it presents towards the north and west. It is composed of beds of the nummulite limestone, remarkably fossiliferous, both nummulites, shells, echini, and even fossil crabs being abundant. The quarries are of great extent, and the stone beautifully white, or slightly yellow, and capable of being chiselled into fine mouldings and architectural forms. From the summit of the ridge, which had been the sanitary camp of the British troops during the outbreak of cholera, we enjoyed an extensive view, and one full of variety and interest. To the right, at our feet, lay the capital of Egypt, with the streets, palaces, mosques, and churches, interspersed with gardens and groves of trees; and in the foreground, standing on a projecting platform, the citadel and the mosque of Mehemet Ali, with its exquisitely graceful minarets. To the left, and washing the eastern base of the hills, stretched the green and fruitful plain of the Nile; the great river itself carrying its channel from side to side, and crossed opposite the city by the bridge we had passed over the previous day. Looking across the valley, the horizon towards the west is bounded by the yellow ridge of the desert sands, in front of which, as if to mark the boundary between the region of verdure and that of drear sterility, are planted the Pyramids, in grand procession, headed by the greatest and oldest, those of less stature and of more recent date bringing up the rear throughout a tract of many miles up the river side. Away towards the north might be seen the plain of the Delta, with its green illimitable fields, and frequent groves of palms. From no other spot, perhaps, can the mind become so fully impressed by the fact that to the Nile, and the Nile alone, does Egypt owe all she has of fertility and wealth. Beyond is the desert of sand, a sea-bed without its animate forms, lifeless and waste. As Dean Stanley has well observed, the Nile, as it glides between the Tombs of the Pharaohs, and the City of the Caliphs, is indeed a boundary between two worlds.[2]

Under the guidance of Dr. Schweinfurth we were able to see the

[1] "Our Inheritance in the Great Pyramid." However much, in this hypercritical age, one may feel inclined to doubt some of the conclusions at which this author has arrived, every one must admire the labour and enthusiasm with which he endeavoured to work out a great problem.

[2] "Sinai and Palestine," Edition 1873, Introduction, p. xxxiv.

most satisfactory evidence that at a very recent period, and while the shells of the Mediterranean and Red Seas were still unchanged, all the great plain we have been contemplating was submerged to a depth of over 200 feet. At about this level the limestone rock is bored by *Pholades*, and shells now living in the neighbouring seas are to be found imbedded in sand and gravel which then formed the shores; while the coast-line was defined by the cliffs, which rose some 400 feet above the waters. The sand-beds with large *Clypeasters*, which occur south of the Pyramids, indicate the position of this sea-bed on the opposite side of the Nile Valley. How great has been the change since then! But long ere the foundations of the Pyramids were laid, the sea had receded to a level perhaps not very different from that at which it stands to day.[1]

On ascending towards the summit of the ridge we visited several enormous caverns sufficiently large to shelter an army, which occur on both sides of the valley, and at an elevation of about 500 feet above the sea. These caverns are hollowed in the limestone rock, and evidently not by human agency. They afford a suitable retreat for the rock pigeons, which we started from their nests. Dr. Schweinfurth considers these to be ancient sea-caves, and if this be so the land has been still further submerged within a very recent period. On the summit of the plateaux we reached one of the entrenchments of the army of Arabi Pasha, and at a short distance further, towards the east, the British station for making observations on the recent transit of Venus. The spot is marked by a block bearing the following inscription :—

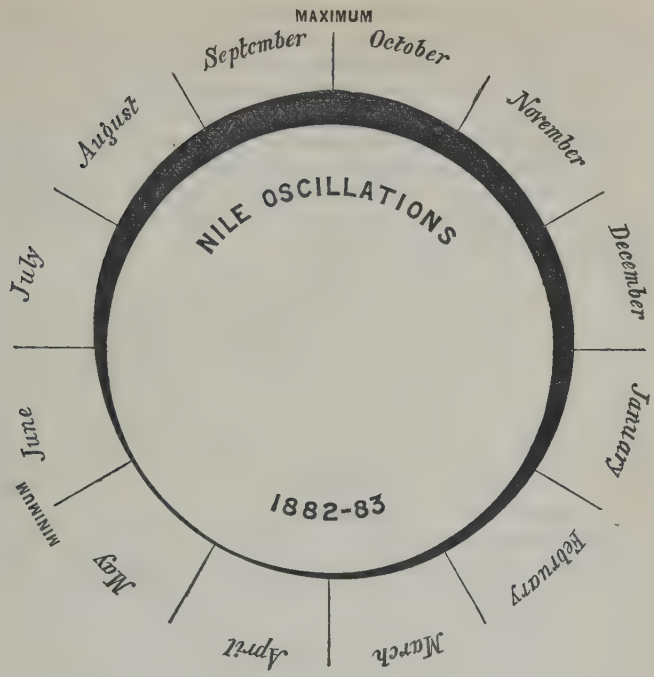
CAPTAIN GREEN, R.E., 1883.

Next in interest to the Pyramids we may place the Museum of Egyptian Antiquities at Cairo, a collection of surpassing interest and variety, illustrative of ancient Egyptian art, collected mainly through the instrumentality of Mariette Bey. The museum stands by the banks of the Nile. It unfortunately happened that at the time of our visit the Director, to whom I had a letter of introduction, was absent, and the official catalogue had not then been published,[2] but with the aid of either "Murray" or "Baedeker," and the inscriptions accompanying the objects themselves, the visitor need be at no loss.

In this place I may refer to the Nile oscillations. On the wall of Shepherd's Hotel is to be seen a map, or diagram, upon which is represented the oscillations of the waters for each year as it comes round. Those for the year 1882–3 were as follows :—

[1] To this physical fact in the history of the Nile Valley I shall have occasion to allude further on; and the detailed proof must appear in another place. It is only necessary here to give the general result. When we say that the sea has receded, this is owing to the land having been elevated.

[2] But has since, as I see by a recent review in the *Times*.



Elevation.	*Months.*
Minimum	May. June.
Slight increase	Latter part of June.
Rapid increase	July. Middle of August.
Slight increase	Middle of August. „ September.
Maximum	End of September.
Slight decrease	Middle of October.
Rapid fall	End of October. November. December.
Gradual decrease	January. February. March. April.

On Monday, 5th November, our Arabs and camels mustered for inspection in an open space of ground not far from our hotel, and we went out to visit them and to have our first experience of bestriding a camel's back. There were about forty in all—some with saddles for riding, these

being slight and young-looking; the others with nets and ropes for baggage. The men belonged to the Towâra tribe, of whom the head Sheikh Ibn Shedid, resides permanently in Cairo.[1] I liked the faces of the men, which were open and good-humoured, and felt confident we should be perfectly safe under their charge, a confidence not misplaced by subsequent events. The Towâras occupy the whole of the Sinaitic promontory south of the Tîh plateau. They are divided into five branches, of which the Szowaleha is the largest; next the Aleygats, then the El-Mezeine, the Ulad Soleiman who live near the town of Tor; and last, the Beni Wassel, a very small branch near the south-east coast.

The Towâras are a peaceable tribe, friendly to travellers, and had no part in the murder of Professor Palmer and Lieutenant Gill. Their Sheikh, on the contrary, was instrumental in bringing four of the culprits to justice, and accompanied Sir C. Warren into the desert to effect their capture.[2]

The negociations for our escort had been effected between Messrs. T. Cook & Sons' agent at Cairo and the Abbot of the Monastery of St. Catherine, and by him our men and camels were sent over to Cairo, from their home in the Wâdy Feiran, in order to receive their baggage loads, and to pass inspection; and they had arrived outside the city the evening before we saw them in the space near the hotel. In the course of the day the whole procession with their loads passed in front of our hotel, and afforded a sight probably not very novel to the residents, but to us not only novel, but of considerable interest. The camels upon which we were to ride were bestrode by their respective drivers, then came others with barrels of flour, barrels for water, the tents, five in number, rolled up into the most compact dimensions, boxes of provisions, our camel trunks, crates with live turkeys and poultry, and other matters too numerous to mention in detail. We were not again to see them until our arrival at the landing stage near Ain Musa, on the eastern side of the Gulf of Suez, to which place we intended to proceed by rail and boat.

On the morning of 8th November we left Cairo by rail for Suez, passing by Zagazig and Tel-el-Kebir, where Arabi Pasha had made, a few months previously, his most determined, but ineffectual, stand against the British arms. As far as Zagazig the country is richly cultivated, immense fields of corn, cotton, and sugarcane succeeding each other mile after mile; while the station platforms were piled with great bales of cotton, compressed and bound with iron-straps, for shipment to England and elsewhere. Occasionally the Egyptian ibis, an elegant bird with white

[1] Not by choice, probably, but by constraint, as a hostage for the good behaviour of the tribe.

[2] It had originally been intended that we should have an escort of the Egyptian Camel Corps, which had been kindly granted by Cheriff Pasha at the request of Captain Kitchener, Major in the Egyptian cavalry, but the proposal was afterwards abandoned for very good reasons; first, it could not accompany us further than Akabah, beyond which station the services of an escort were only expected to be of value; and secondly, we felt there was no necessity, as we had full confidence in the good faith of our convoy.

plumage, and in form somewhat like a small heron, might be seen in flocks amongst the cultivated fields, close to the teams of buffaloes while ploughing; or at other times perched on the backs of the buffaloes themselves, busily engaged in clearing the ticks from the animals, a process which the animals themselves evidently enjoyed.

After leaving Zagazig the country becomes more and more arid and desert-like, till at length, on approaching Tel-el-Kebir, the sands set in as far as the eye can reach on both sides. We noticed the ditch and entrenchments of Arabi's army which were stormed by the British troops under General Lord Wolseley, and a small camp of Egyptians still occupying the ground. We also passed the burial-ground of the British troops who fell on that memorable occasion, prettily planted with shrubs and flowers, which were being carefully tended by gardeners. Tablets to the memory of the officers and soldiers have been placed on the walls of the English church at Cairo.

The route lay along the side of the "Sweetwater Canal," which carries the waters of the Nile to Suez, Ismailia, and Port Saïd. This canal was constructed by the Ship-Canal Company, and it occupies very much the line of the ancient channel intended to connect the waters of the Nile with those of the Red Sea, and beyond the tract influenced and irrigated by its waters all was sandy desert covered by scrub, amongst which the only visible inhabitants were a shepherd and his flock. It was dark when we reached Suez, and on reaching our hotel we learned that the steamship, the "Shannon," had arrived from England, and lay in the Gulf awaiting the arrival of H.R.H. the Duke of Connaught, on his way to India.

Next morning, on ascending to the roof of our hotel, to take a glance at the surrounding country, we were struck by the bold aspect of Jebel Attâkah, which rises in the form of a lofty escarpment along the western shore of the Gulf of Suez a few miles from our position. In form and outline it seemed to bear some resemblance to the ridge of Jebel Mokattam behind Cairo, and to be in some measure, in a geological point of view, representative of it; the strata were, in fact, easily visible from the roof of the hotel. We determined to devote the day to a visit to this fine range, and taking a sail-boat manned by four Arab sailors and a boy we dropped down the Gulf. The wind was light, and sometimes failed us, so that the sailors had recourse to the oars, which they accompanied by a monotonous chant extemporised for the occasion, and, as we supposed, in our honour; as we could distinguish the word "hawajah"[1] not unfrequently. At length, after three hours, we landed on a pier leading up to the quarries which were opened by M. De Lesseps for his buildings at Suez. From the pier we toiled up to the quarries under a burning sun (the temperature in the shade being 91° Fahr.), and were rewarded by finding the limestone rocks crowded with fossil shells, though generally only in the form of casts. Our return was enlivened by a steady breeze which

[1] Hawajah (or gentleman) is the Arabic word applied to Europeans.

sprung up from the north-west, and as we were carried along we were on the look-out for the flying fish, which from time to time leaped out of the water, and after skimming over the crests of the waves for some yards, disappeared. As we neared the harbour the sun went down behind Jebel Attâkah, and soon after, the sky over the hills was all aglow, as if behind was concealed a great city in conflagration; the deep red of the west shading off through purple and roseate hues into the dark grey of the zenith. It is only in the East that such sunsets reward the beholder.

(*To be continued.*)

LETTER FROM CAPTAIN KITCHENER.

ABBASSIYEH,

13*th January*, 1884.

You will, I know, have received before this a full account of our proceedings from Professor Hull until we parted—he going to Gaza, and I striking across the desert to Ismailia. Our rate of travelling up the Wâdy Arabah was too fast for survey work. At first, while the valley was narrow, I was able, with Mr. Armstrong, to keep up by working hard, and being out almost every night after dark; but when the valley increased to fifteen miles wide I found it was impossible on camels to survey both sides at the rate we moved. I did all I could, and took up the work again later on the west side. My report will show how the work was done, and if you measure the distances I had to go I think you will find I got over as much ground as a camel would allow. They are bad beasts for surveying. I used to keep mine at a good trot for a bit until he got cross, which he showed by roaring, and then suddenly shutting up all four legs and coming with a thud on the ground, at the same moment springing up again and darting off in an opposite direction. Continued correction caused him to collapse again, and then roll, which was decidedly uncomfortable. I don't think I have ever done such hard work as I had up that Wâdy Arabah from Akabah to the Dead Sea. The result is, however, I think, very satisfactory; I have been able to run a triangulation up the whole way, and join on to the old work by measuring a base at Akabah. I took the levels by vertical angles, and kept up a complete chain of levels throughout. I found Akabah is out of position, being shown too far south on the Admiralty, and I found the south end of the Dead Sea to be terribly out—the Lisan has to be moved about three miles, and the whole shape of the south end altered. You will get full details in my report and plans, which I am preparing to send you as soon as possible.

By going up from the south end of the Dead Sea to Bir-es-Seba, I was able to put in a corner of the map and join on to our old work.

After Bir-es-Seba I considered that the road by El Arish to Egypt was already well known, so by myself, with only four camels and four Arabs, I made my way across to Ismailia, about 200 miles. One of the Arabs had been part of the road fifteen years before; none of the others knew anything of it, but they were good men from the Egyptian Haiweitats, under a relation of the Sheikh Ibn Shedid. We passed a good many Arabs of the Terabin and Ma'azi tribes, and I was received amongst them as Abdullah Bey, an Egyptian official, thus reviving a name well known and much revered amongst them; they supposed me to be a relation of the great Sheikh Abdullah. I was everywhere well received, and heard many expressions of the utter disgust the Arabs have for Palmer's murderers. They were also very full of accounts of Sir Charles Warren's pursuit of the murderers, and the energetic steps he took to catch them. My route—for there was no path or road—was a good deal over rolling sand drives, with no water supply. At one time we had a council of war, whether we should go back for water or push on to Ismailia; but as we had brought as much as we could carry from the last supply I insisted on pushing on, and we reached Ismailia without loss, but at our last gasp for water. The last two days' travelling were the most trying I have ever experienced; a very strong west wind blew the sand up into our faces, so that the camels would hardly face it. I will not anticipate my report and plans by giving you now a description of the route, but I can certainly say that it is a 200 mile trip I have no wish to traverse again. We only missed our way for a short time once during the whole march, and I was much struck by the wonderful way the Arabs can make their way across difficult country without compass to guide them. I travelled every day from 8 a.m. to 6 p.m. without stopping, and with very little variation. One night we had to travel a good deal after dusk, to make a brackish pool of water, and I very nearly lost the party, as we had to separate to hunt for the water.

There was only one supply of good water after Wâdy Feira, and that was in Wâdy el Arish; after that we only found one brackish small supply as far as Ismailia.

H. H. Kitchener.

ON THE RELATIONS OF LAND AND SEA IN THE ISTHMUS OF SUEZ AT THE TIME OF THE EXODUS.

This may be the proper place to refer to a suggestion of mine which has excited some interest, namely, that at the time of the Exodus there was a continuous connection of the Mediterranean and the Red Sea.[1] I never intended this to be considered other than a hypothesis towards the solution of a real difficulty which has occurred to all geographers who

[1] The *Times* and *Standard*, 18th February, 1884.

have undertaken to deal with the subject—namely, the determination of the actual position of the passage of the Red Sea by the children of Israel. As far as I am aware, the problem has been dealt with on the supposition that the physical relations of sea and land were, at the time of the Exodus, exactly or nearly as they are at present ; which there is reason to believe is far from having been the case. As Dean Stanley has truly observed, there is only one feature of the scene unchanged and unmistakable, and that is the magnificent mountain of Jebel Atâkah, the "Mountain of Deliverance," which from the south formed an impassable barrier to the escape of the Israelitish host in that direction, and induced Pharaoh to exclaim, "The wilderness hath shut them in !" This is "the precipitous mountain descending on the sea" referred to by Josephus, which doubtless commanded from afar the scene of the great deliverance wrought by Jehovah for Israel.

It is also impossible to doubt that, according to the narrative, the passage was made somewhere in the neighbourhood of Suez, probably Baal-zephon.[1] Briefly stated, the Israelites, instead of taking a course into Canaan along the coast of the Mediterranean, which would have brought them into collision with their future enemies, the warlike Philistines,[2] were directed to move southwards from Ramses (or Pi-Ramessu),[3] the capital of Egypt under Rameses II, and after a day's journey they reach Succoth (the place of tents), and on the following day Etham, situated on the edge of the wilderness ; that is, the district lying to the north of the Bitter Lakes, over which the road into Palestine and the east passed. By this road also the nomad tribes from Edom entered the pasture lands with their flocks.[4] From all this, and the absence of any reference to a natural water channel between Egypt and the east, there can be little doubt that at the time of the Exodus, and long before, there was continuous land across the Isthmus to the *north of the Bitter Lakes.* I therefore wish now to modify the statement which has been made in my name to this extent ; but I hope to be able to show that to the south of that lake the evidence leads to a different conclusion.

From Etham the Israelities "turned" southwards to Pi-hahiroth before Baal-zephon. This locality, as suggested by Dean Stanley, was probably in the vicinity of Ajrûd, the halting-place of the Mecca pilgrims.[5] It is at this point that the difficulty of reconciling the Bible narrative with physical facts meets us ; for, according to the present position of land and water, there is a direct landway across into the "wilderness of Etham,"

[1] Exodus xiv, 2.

[2] Exodus xiii, 17.

[3] Dr. Brugsch-Bey, "Egypt under the Pharaohs," edit. 1881, vol. i, p. 230, *et seq.* This author places Ramses (or Pi-Ramses) on Lake Menzaleh, at the entrance to the Tanitic branch of the Nile, and allowing twelve or fifteen miles for a day's march from Ramses, the Israelities at the end of the second day would have reached a position near Ismailia.

[4] Brugsch-Bey, *ibid.*, p. 234.

[5] "Sinai and Palestine," edit. 1873, p. 66.

by Chalûf, which lies between the Gulf of Suez and the southern end of the Bitter Lakes.[1] It was possible, therefore, for the Israelities to have crossed into Arabia Petræa without the miraculous interposition of God, had the position of sea and land at that period been the same as at present.

It is clear from the narrative that, when the Israelites found that they were being pursued by Pharaoh and his army from the north, they were in a position of extreme perplexity.

Encumbered with a multitude of women and children, flocks and herds, and enfeebled by long servitude, they exclaimed to Moses in bitter irony, "Because there were no graves in Egypt, hast thou taken us away to die in the wilderness?" But it does not appear as if they considered the chief sources of their danger were those above stated. It may be gathered from the narrative, that their danger lay in the nature of the surroundings, and in the physical obstacles to their progress out of Egypt. To the north was the army of Pharaoh; to the south, the desert and mountains; to the west, Egypt, from which they were fleeing; and to the east, the waters of the Red Sea. *Here* was the physical obstacle which (as it seems to me) destroyed their hopes, and drew from them the expression of despair.

Now, let any one compare the present physical conditions of the district north of Suez with those here indicated, and ask himself whether, if they had been at that time as they are now, there would have been cause for this cry of despair, and necessity for a stupendous miracle of deliverance, such as the Bible narrative relates, which impressed itself indelibly on the traditions of the people in whose behalf it was wrought. What was there in the present position of land and sea to have prevented the host of Israel from marching across the hollow, along which the ship canal has been excavated? The canal of Rameses II, which connected the Nile with the Red Sea, entered the Bitter Lake (L. Amarus) at the northern end; but though traces of an ancient canal have been discovered between the southern end of that inland lake and the present port of Suez, it does not follow that these were part of the original and more ancient canal. They may, on the other hand, be referable to the time of the Emperor Trajan, or of that of the Caliphs. All that I wish to contend for is, that there is no sufficient evidence to show that at the time of the Exodus, B.C. 1491, land extended from the head of the Gulf of Suez to the Bitter Lakes. If this be admitted, it is proper for us to inquire, What physical evidence is there in favour of the view that the Red Sea extended northwards of its present position at the period of the Exodus? The reply to this

[1] Most geographers have placed the passage at the Straits of Suez; but if there was land immediately north of this at the head of the Straits, why should the Israelites (ignorant of God's intended miracle) have been filled with dismay on viewing their position, when there was an open way into the wilderness, whither the Egyptians with their chariots could not have followed them (see "Biblical Atlas and Gazetteer," London). Professor Ritter supposes that the place of the passage is to be sought above Suez in the ancient bed of the sea. This is the view in favour of which I hope to show there is evidence based on physical considerations.

question lies in the complete evidence which is to be observed of a recent elevation of the whole land area of this region ; to which is attributable the occurrence of beds of sand and gravel, containing shells, corals, and other marine forms, now existing in the waters of the Gulf of Suez, along either side of that gulf, up to a level of at least 200 feet above its waters. The sea has therefore receded—or, rather, the land has been raised—to this extent during the period of the present forms of marine life. Now a depression of 200 feet below the present level of the land would place under sea-water the whole of Lower Egypt, and large tracts on both sides of the Gulf of Suez ; and, in fact, there can be little doubt that the inland cliffs of the Tîh on the one hand, and of Jebel Atâkah and Jebel Abu Derâj on the other, were originally the sea cliffs of the ancient Red Sea ; but this was at a time long antecedent to the period of which we are speaking. The maximum submergence above referred to was much more ancient than the period of history ; but it is not inconceivable that the entire elevation of the land and sea bed into the position we now find them, had not been effected at a time so far back as 3,000 years. Now let us inquire, What extent of submergence would be required in order to bring the waters of the Gulf of Suez as far north as the Bitter Lakes? Fortunately, the surveys made for the ship canal enable us to answer this question with much exactness. South of the Bitter Lakes, the highest point crossed by the canal was at Chalûf, distant eleven miles from the sea, and this is q. p. 26 feet above the level of its waters. To the north of the Great Bitter Lake there are two elevations—one at Tunum, between this lake and Lake Timsah, which reaches q. p. 25 feet (not very different from the former), and another at El Guisr, between Lakes Timsah and Menzaleh, which reaches a level of from 40 to 60 feet (average 50 feet) above the same datum.[1]

In considering the question of changes of level, we may suppose that the vertical movement was slow and gradual ; and also that, within narrow limits, such as those of the Isthmus, the whole area was equally elevated or depressed during the same period. Now, on the supposition that the rise of the land from below the sea, indicated by the raised beaches and shell beds, was still in progress at the time of the Exodus, it will be seen from the above levels that the waters of the gulf would have extended right northwards into the Bitter Lakes, if only 26 feet of elevation had remained to be effected ; while, at the same time, there would have remained unsubmerged a tract of land with a maximum elevation of about 24 feet to the south of Lakes Menzaleh and Ballah ; that is, in the very district where, as appears from history, there existed a land connection between Egypt and the East.

Taking the above physical facts and deductions into consideration, it seems to me in the highest degree probable, that as far back as the age of

[1] Carte de l'Isthme de Suez, dressé sous la direction de la Comp. Univ. du Canal, 1866 ; also Sir W. T. Denison "On the Suez Canal," Proc. Inst. C.E., 1867, quoted in Spon's *Dictionary of Engineering*. I am also indebted to Sir Charles Wilson for a statement of the levels.

Rameses II, and his successor Mineptah II, under whom the Exodus took place,[1] the waters of the "Red Sea" extended northwards up the valley at least as far as the Bitter Lakes, producing a channel from 20 to 30 feet in depth, and perhaps a mile in breadth; a terrible barrier to the Israelites, and sufficient to induce a cry of despair from the whole multitude. If this view be taken, the Bible narrative (which I assume to be perfectly exact) will be brought into harmony with physical conditions; and the difficulty which has surrounded the subject will have been, to a great degree, removed.

On the same principles we may suppose that the gradual elevation of the sea-bed and adjoining land has progressed, till at some period—one cannot say how distant—the present relations were established; but supposing the rise to have gone on till very recent times, or to be still going on, the rate of elevation would be less than one foot in a century.

EDWARD HULL.

M. MASPERO'S WORK IN EGYPT.

THE following letter, addressed to Mr. Scott-Moncrieff by M. Maspero was published in the *Times* of February 23rd.

(*Translation.*)

"BOULAK, *Feb. 2nd*, 1884.

"SIR,—During the four years I have had the honour to direct the Department of Antiquities, I have never ceased to protest against the numerical insufficiency of the staff and the inadequacy of the funds placed at my disposal. Permit me to repeat this complaint once more, though the present state of Egypt affords me but little hope that it will be heard.

"You know how many monuments are found above the surface of the soil between the mouths of the Nile and the Second Cataract; no country in Europe, not even Italy or Greece, possessing so great a number on so small an extent of territory. Nature, moreover, has divided these monuments into three groups—first, that of the Delta, with Alexandria, San, Sa (Saïs), Bubastis, and the regions mentioned in the Bible; secondly, that of Egypt proper, with Memphis, the Pyramids, the Faioum, Beni-Hassan, Tel-el-Amarnah, Siout, Abydos, Denderah, Thebes, Esneh, Edfou, Koum Ombou, and Philæ; thirdly, that of Nubia, with all the temples of the Ptolemaic epoch in the neighbourhood of Philæ and the wonderful Pharaonic ruins of Wâdy Essaboua, Ibsamboul, and Wâdy Halfa. Of these three groups only one is placed under the care of the Department of Antiquities, and protected as well as may be from the avidity of treasure-seekers and the mischievous folly of tourists—that in Egypt proper. Even this is imperfectly protected, and some localities such as Siout, Tel-el-Amarnah, Bersheh, Beni-Hassan, Illahoun, &c., remain without

[1] Brugsch-Bey, "Egypt under the Pharaohs," edit. 1881, vol. i.

guardians. The Delta and Nubia have no protection, and are left to the mercy of the first who may choose to destroy or rifle the temples. Thus, in Nubia the inhabitants of the village of Dandour have recently caused the wall of the temple to topple down through taking the *sebakh;* at Mansourah a proprietor demolished a superb naos of Nectanebo I in order that he might use the *débris* for the foundations of a bridge; at Zagazig and at Damanhour the treasure-hunters in 1883 discovered depôts of *bijoux*, which, valued at the weight of the metal, without taking the artistic workmanship into account, were worth over 50,000f. The artistic and archæological treasures of Egypt are open to pillage throughout two-thirds of the Egyptian territory.

"Observe that here I speak only of the service appointed for the guardianship of the monuments; another part of my functions obliges me to make excavations, to endeavour to increase the number of the monuments deposited in the Boulak Museum, and to discover new documents which may enable us to re-write the ancient history of the Egyptian and Semitic worlds. The funds allotted to the service for the prosecution of excavations are so small that in Europe I am almost ashamed to name the exact figures. They have been diminishing from year to year; they have never exceeded 35,000f. per annum, and have always approached much more nearly 25,000f. With 35,000f. I can still sustain the burden imposed on me, provided that I undertake a great deal personally. The discovery of the Royal mummies at Thebes; the opening of sixteen pyramids, of which some, like that of Mydoum, passed for impregnable; the clearing away of the rubbish begun at Luxor, show what we can do with the miserable means afforded us. But I learn that many, even among Europeans, consider that these few thousand francs are yet too heavy a charge for the Treasury, and decry our labours as entailing a useless expense. I confess I cannot see sense in the accusation. In ordinary times Egypt is visited every year by about 3,000 travellers, drawn there, not by factories, or cotton, or railways, or all that it is customary to call useful and productive, but by the monuments of Arab and Egyptian art. Estimating the expenditure of these travellers at 2,000f. each on an average, there is a sum of four to six millions of francs a year which is left by them in Egypt, and which the country gains entirely. In first deducting from these millions the thousands of francs which the Department of Antiquities requires, Egypt does not incur a useless expense; she has the wisdom to take from the riches which come without trouble to her funds barely sufficient to keep up the artistic and archæological capital bequeathed to her by antiquity.

"Circumstances are so unfavourable at present that I shall not ask for an augmentation proportionate to the importance of the service: I shall only ask the Government not to diminish the little it gives me. On the other hand, I cannot resign myself to leave two such important provinces as the Delta and Nubia to be pillaged. Already I have endeavoured to engage private individuals to promote the objects we have in view in those parts of the country in which I cannot carry on excavations myself on the Government account. I have favoured the formation of the Egyptian

Exploration Fund, for which M. Naville last year discovered the town of Pithom, and for which Mr. Flinders Petrie is executing some works at Tanis this year. I have concluded arrangements with Messrs. Cook which will enable me to obtain some money from all the travellers that firm conducts through the country. The French Government has put some thousands of francs at our disposal, through the intervention of the École d'Archéologie which it has founded at Cairo. It seems to me that private persons might come to our aid as companies and Governments do, and that subscriptions opened in England and in the other countries of Europe might furnish us with some resources. With so little as it is our fortune to obtain our budget is so restricted that the smallest sums of money will be welcome.

"I leave it to you, Sir, to see if this suggestion can be made to lead to any practical result, and beg to assure you, &c.,

"G. Maspero."

PILLAR OR GARRISON?

Sir,—With all due respect to Captain Conder, I do not think my position with regard to 1 Samuel xiii, 23, can be so easily shaken. In Joshua xv, 3, 9, &c., the "boundary line" of the tribes is *the subject* of the narrative, but in the episode of 1 Samuel xiii and xiv there is no hint of a boundary being in question, unless it can be read into the word in dispute.

I cannot go into the Hebrew; but the question is not whether the verb can be employed of some kinds of inanimate objects, but whether such an object as a menhir can be said to have *gone out* or *extended*.

That this distinction exists may be shown in the English words, by substituting for "garrison" the words proposed by C. R. C. as the correct rendering of מצב. We at once recognise that we could not properly say "the pillar of the Philistines went out to the passage of Michmash," or "the menhir of the Philistines extended to the passage of Michmash." You could indeed say the boundary of the Philistines went out (or extended), &c., because in the subject of a "boundary" there is involved the active principle of extension in length of circuit, or expansion of an area; but I do not gather that Matzab can signify a boundary in this sense, but only a boundary *mark* set up to signify the precise position of the boundary at a particular place.

Following verses 5 and 6 of chapter xiii, the latter part of the chapter really described a more extended irruption of the Philistines than that prior to Jonathan's exploit, and verse 23 naturally follows on verse 16 as describing a military foray.

If it had signified a *lessening* of the extent of Philistine territory consequent on Jonathan's prowess, ought it not to have been mentioned before verse 5, and to have been worded "and the *Matzab* of the Philistines went *back* to the passage of Michmash?"

The word clearly can be rendered "garrison" or "outpost," and if this rendering is kept there is no *difficulty* about the whole narrative. Besides what does C. R. C. make of 2 Samuel xxiii, 14?

Before I close, I wish to point out the following errata on page 244, *Quarterly Statement*, 1883:—Line 7, נציב should be נציב; line 12, eruption should be irruption; line 21, sixteen should be fourteen.

Yours obediently,

H. B. S. W.

THE NAMELESS CITY.

To the Editor of the Palestine Exploration Fund Quarterly Statement.

SIR,

May I be allowed to make one or two comments on the remarks of C. R. C. on pages 183–4 of the *Quarterly Statement* for 1883?

First, I would ask how Kirjath-Jearim can possibly be the city where Saul met Samuel, in the face of the statements in 1 Samuel ix, 27, and x, 1, 2, showing that it was *immediately* after leaving Samuel that Saul was to meet the "two men by Rachel's sepulchre?" If we are not to understand that Rachel's sepulchre was *near* to the "end of the city" where Saul was anointed, then I wonder that C. R. C. does not accept the view of the Arabic Commentary I quoted in *Quarterly Statement*, 1884, page 53.

I cannot see, however, that the expression "end of the city" has any special connection with Kirjath-Jearim.

Seeing that the Hebrew word here used for "the end" is used of the "end of the rod" with which Jonathan tasted the honey (1 Sam. xiv, 27, 43), of the "end of the conduit" where Isaiah was told to meet Ahaz (Isa. vii, 3), and again in 2 Samuel xxiv, 8, respecting the "end of nine months and twenty days" in which Joab was occupied in taking the number of the people, to say nothing of the "end" of Jordan, of the valley of giants (Josh. xv, 5, 8), and of the mountain (Josh. xviii, 16), it must be manifest that it simply means the "end," the furthest extremity only.

May I ask also why C. R. C. explains Aretz Sha'lîm as being = land of caverns?

Is it not more reasonable to connect it with Shual = Jackal, in the "land of Shual" (1 Sam. xiii, 17), and perhaps with "Hazar-Shual?" Dr. Young renders it "jackals," and Gesenius suggests "region of foxes."

Yours truly,

H. B. S. W.